

## **October 2003 Environmental Contaminants Report SOUTHERN NEVADA FIELD OFFICE (LAS VEGAS, NEVADA)**

### **USGS BEST Sampling on the Lower Colorado:**

The Southern Nevada Field Office (SNFO) is providing field and logistical support to USGS crews that are sampling at 15 stations throughout the Lower Colorado as part of the Biomonitoring of Environmental Status and Trends (BEST) Program. Our office, along with Service staff from the Arizona Fishery Resource Office, will assist with sampling in the Pearce Ferry and Willow Beach reaches of the river during the week of October 29, 2003. The BEST database is designed to provide information on environmental health of aquatic ecosystems of large rivers throughout the U.S. The initial pilot was done in the Mississippi River then followed by the Columbia and Yukon Rivers. Monitoring techniques used to detect contaminant effects on aquatic biota include chemical analysis of various aquatic media (like fish tissue and bed sediment) and health of fish at two different trophic levels. Ten males and ten females of two species are collected at each site and a comprehensive set of samples are used to determine health of the fish (sex steroid hormones, macrophage aggregates, liver histology, etc). For more information about BEST see their web site; <http://www.best.usgs.gov/>. Contact: Erik L. Orsak 702-515-5230.

### **Alternative Discharge and Endocrine Disruption in Lake Mead:**

SNFO continues to work with the Nevada Division of Environmental Protection (NDEP), three municipal wastewater dischargers (collectively known as the Clean Water Coalition (CWC)), and other agencies to address Service concerns with increasing flows of treated effluent into the Las Vegas Wash and Boulder Basin of Lake Mead. Based on current growth, future municipal wastewater flows are predicted to double by the year 2025 to over 300 million gallons per day. The CWC is conducting a multi-year study, including water quality modelling and an Environmental Impact Statement, to determine a suitable location to discharge future flows. We are particularly concerned about the potential adverse impacts to critical habitat for the endangered razorback sucker (*Xyrauchen texanus*). Our concerns have centered on non-conventional pollutants, such as pharmaceuticals and personal care products, that are commonly found in wastewater and may be causing endocrine disruption in the Lake Mead fish. In 2002 the CWC applied for renewal of their NPDES discharge permit. Our recommendations to NDEP included the expanded monitoring of effluents for non-conventional pollutants and the initiation of a cooperative reproductive endpoint study to determine whether physiological changes that have been documented in fish from Las Vegas Bay (e.g., decreased 11-ketotestosterone, increased 17 $\beta$ -estradiol, and decreased sperm quality in males) are causing reproductive impairment at the population level. Although the permit was issued without the additional monitoring requirements and the CWC has declined to participate in a cooperative reproductive endpoint study, the SNFO is actively pursuing other partners and matching funding to implement the study. Contact: Erik L. Orsak 702-515-5230.

**Special Study on the Muddy River:**

SNFO staff completed the second field season of a two-year study on contaminant uptake in Muddy River fishes. The Service partnered with U.S. Geological Survey (USGS) and Nevada Department of Wildlife staff to capture 11 species of fish (a total of over 1800 individuals), of which only the Virgin River chub (*Gila seminuda*) and Moapa speckled dace (*Rhinichthys osculus moapae*) were native. A total of 19 blue tilapia (*Oreochromis aureus*), 38 catfish (*Ictalurus melas*), 1 common carp (*Cyprinus carpio*), and 2 bluegill sunfish (*Lepomis macrochirus*) were collected and preserved for trace metal analysis. The Muddy River, located approximately 50 miles northeast of the city of Las Vegas in Moapa Valley, flows south from numerous natural springs at its headwaters, to the Overton Arm of Boulder Basin on Lake Mead (a distance of 26 miles). The Muddy River has been adversely impacted by habitat modification, introduction of non-natives, and degraded water quality. The Muddy River is currently listed on the 303(d) list of impaired waters under the Clean Water Act due to elevated levels of total phosphorus, arsenic, boron, and iron. Once completed, the study will determine if a confined animal feeding operation, coal-fired power plant, or other adjacent land uses in this watershed are posing a risk to the Virgin River chub, a species of concern in the Muddy River and federally listed as endangered in the Virgin River. The results of the study (available in late 2004) will ensure that environmental contaminants do not hinder ongoing recovery and restoration efforts for the Muddy River ecosystem. Contact: Erik L. Orsak 702-515-5230.

**Las Vegas Wash Special Study:**

SNFO is in the process of completing our first field season for the Las Vegas Wash Study to address concerns with conventional pollutants through a cooperative environmental monitoring program with the Southern Nevada Water Authority (SNWA). The study is being co-funded by the Service and SNWA. Efforts to date have focused primarily on collection of 31 bird egg samples at six sites along the Wash and our regional reference site at Pahrnagat National Wildlife Refuge. Dr. Joseph Skorupa in the Sacramento Fish and Wildlife Office is providing assistance and oversight for bird monitoring efforts. The egg samples, along with fish samples to be collected this fall, will be analyzed for a myriad of organic and inorganic pollutants. Contact: Erik L. Orsak 702-515-5230.